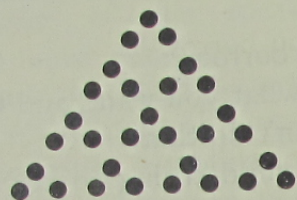


perhaps invented, by the Inspector General of Schools, Mr. J. A. Hartley.*

The grand principle of all is to let the child *find out things for himself*.

This may be applied to the multiplication table. First, let the child arrange in a column ten pairs of counters. From the column he runs over upwards and downwards the multiples of two. For the threes he may have a paper ruled in squares, and a coloured pencil, and he may construct a pyramid of threes thus :—



When the child has learnt either the Roman or Arabic symbols he can fill in the numbers 3, 6, 9, 12, &c., working from right to left, the bottom line being taken first. In this way the apex will be marked 30. A similar pyramid will give the multiples of 4 up to 40.

There is another way in which he may practise his multiples. As soon as he knows the Arabic notation let him write a column of figures from 1 onwards, and let him put the selected number and all its multiples up to ten times the number *in colours*.

Next, let him have a penny manuscript book for his "record book." Time him with the minute-hand of a watch, and see how many seconds it takes him to run up and down the multiples of each number. Let him enter the result in each case, and thus keep his "record." Whenever he "beats his record" there is a new entry with its date.

By such devices the interest of children is aroused and maintained. The way is, to make all truths clear by giving actual things to count with, and when any truth has been arrived at, then to make it a workable instrument by means of frequent use.

* See his "Teachers' Manual of Elementary Arithmetic," Adelaide, Leader, 1888.

ATHLETICS IN RELATION TO A LIBERAL EDUCATION.

BY DR. A. J. H. CRESPI, *Member of the Royal College of Physicians.*

Wellington is reported to have said that Waterloo—and by implication his Peninsular victories also—was won on the playground at Eton; in other words, that the endurance, activity, and bodily strength which were important factors in gaining the most decisive battle of the Napoleonic campaigns were trained and developed at our public schools. Nor is Wellington the only successful general who has attached great importance to games as part of a liberal education; and, recently, regrets have been expressed that it is not easy to give candidates for commissions marks for efficiency in riding, cricket, polo, golf, and swimming. Not long ago a young officer, who had seen a good deal of service in Egypt, said to me that to be able to keep your cricket or football team well in hand was more important than to know a little more Latin and Greek, or to make a nearer approach to a perfectly straight line. No doubt he was right. War is a rough game; battles do not take place, we have the high authority of Bismarck for asserting, as the result of science, but rather of accident, and the victory rests with the stronger, the more daring, the more enduring. But life itself is a battle, and success in the conflict is not achieved by distinction in the schools, nor by an accurate acquaintance with particular authors, ancient or modern; true, the more learning a man has the better, but perseverance, energy, and dash count for much, perhaps more.

Nothing comparable to our public schools exists anywhere out of England. You may find scholars as ripe, with principles as high, but where else will you also find that persistent attention to the body which is the glory of our system? We, like

the Spartans, do not lose sight of the body, and whether we are always successful in producing a *mens sana*, we do not forget that a *corpus sanum* requires untiring thought for its production. True, we may sometimes think more of the animal than of the intellectual, and there may be some truth in the sneer that English boys work at their play but play at their work, still the abuse of a thing is no argument against its legitimate use.

Our ancient universities and larger public schools act and react on the smaller and lower, so that even our national schools are in a far-away fashion imitators of Eton and Christ Church; and we are generally beginning to admit that girls require, with certain modifications, very similar mental and physical training, while even young children are all the better for beginning as early as practicable on similar lines.

My object in this paper is not to defend athletics—that does not require to be done in England—but to offer some remarks on the uses of outdoor games, and to impress on parents and teachers the importance of giving a certain amount of time to them, and of trying so far as possible to make them a systematic part of early training.

The physiological advantages of athletics are many. You have the exposure to the weather, and consequently the large amount of fresh air breathed; then there is the freedom and grace of carriage which in some degree is promoted by outdoor sports, and in this matter the upper class Englishman has a signal advantage over the ploughman and the artisan. But more remains: you have the pluck called forth, for to play any game well there must be quickness of eye and limb, the hand must be cunning, and the resolution must not be wanting. Added to all this, there is the habit of working in co-operation with others, which plays so important a part in schoolboy games and is so strong an element of success in later life. If the practice of "athletics" does not remove angularities of person and disposition and promote good feeling, it certainly trains lads and men to stick to their task, to work harmoniously together, and to submit to authority—all most important matters: here, again, the gentleman is so much easier to work with in business and in the ordinary relations of life than is the tradesman or the labourer, not because the former is necessarily abler, or kinder, or higher principled, but because he has been trained to form part of a great machine: retaining his own judgment and his own inde-

pendence, he yet subordinates himself to the common weal, and, as soon as he recognises his duty, does it, just as the well-drilled soldier, though perhaps not braver nor more determined than the undrilled individuals forming a mob, is superior—because he can work methodically with his fellows—while their opponents cannot combine to carry their object.

But some caution is demanded: there is always a danger that these games may be followed up with such persistency and ferocity that actual harm is done to the immature frame and permanent injury to the heart, and, more rarely, to the lungs. The well grown lad of eighteen can bear a great strain; his vital organs are soft and far from set and fully grown, so that the severest exertion does not do much injury in most cases, and a little rest restores the bodily equilibrium. Still we cannot advise such a following up of any game that the breathing is distressed and exhaustion lasts more than a short time, and the master should remember that he has a most delicate and beautiful organism entrusted to his keeping, and that rough handling may irreparably injure it and lead to lifelong mischief.

Some games, such as polo, require costly preparation and special aptitude, so that only a limited number of the rich have the necessary opportunities and means; golf, again, is not often managed by schoolboys, so that these sports may be dismissed. Two games call for special notice—cricket and football, because the attendant expenses are not great and the difficulties are seldom insuperable. Take cricket; I suppose that nothing could equal this game for its happy union of fresh air and moderate exercise combined with discipline and subordination. The long pauses, the comparative absence of danger, and the small strain thrown on the body, make it the prince of games, suitable to all classes. Football is in a different position altogether; rougher and more dangerous, it is no doubt the best training for the soldier, who must be ready to receive as well as to give blows, but for school teams it is a nice question how to prevent violence. Few games admit of greater ferocity and even brutality, while none, so long as the passions of the players are not allowed unrestrained exercise, are more beneficial; there may be less science than at cricket, but there is greater personal rivalry, and more risk of collisions and casualties. The danger really is that some heavy, brutal fellow of vastly superior bulk will charge and beat down a smaller and feebler opponent. The

severe injuries from reckless kicks, which have of late years made football dreaded by parents and feared by masters, are not infrequently of such gravity that only extreme violence could account for them. One would not like to discourage any game which has so much to recommend it when played temperately and courageously, but a grave responsibility rests with the masters and managers to exclude lads of feeble physique, though possibly of superior intrepidity, from teams, while some supervision should be exercised and undue violence should be prevented.

Running is not so useful as cricket and football, for the habits of civilised communities are not conducive to swift movements, so that the Zulu and the Red Indian can generally go far greater distances than the white man in a given time, although in short distances the public-school athlete is said to beat his savage rival easily. The one objection to running is simply the excessive strain on the heart, and nothing can prevent this when the distances covered are long and the speed high, but with moderate distances no undue straining is required, and running is innocent enough. To rowing there is but one objection—the danger of overstrain from attempting too much; otherwise nothing is better and more agreeable; although there is the natural tendency to push this and all other games and exercises to dangerous extremes, so that the less distinguished are excluded and daunted by the superior proficiency of their rivals, while those who reach a certain standard are tempted to overstrain themselves in the endeavour to eclipse their fellows.

It occurs to me that it would surely be prudent were parents and masters to consult their medical attendants before allowing boys to take up any sport requiring a perfectly sound constitution; and that when even the healthiest lads are discovered to be painfully distressed by their exertions they should be held in with a firm hand, and not permitted to tax their frames recklessly; although I cannot but repeat that in most cases the severe exertion does no permanent injury, and vigour is increased rather than impaired.

Lawn-tennis would hardly be ranked by the side of the more athletic sports already named, though it is unobjectionable enough; it certainly gives free exercise to the eye, the hand, and the mind.

I have not said anything about drill, as commonly understood, nor can lads who have the advantage of cricket, football, boating, dancing, and swimming have much need of it, though it is invaluable to shop assistants, and where large numbers have to work together; it develops the muscles, improves the carriage, and teaches subordination. Gymnastics, again, are greatly to be commended and encouraged, and arrangements should, so far as possible, be carried out to enable every boy and girl to go through a course; not to the exclusion of other and more important exercises, but as a necessary part of physical training.

Now for a few words on the training of girls. The great difficulty in their case is not so much inferior physique and a lower stature, as the cumbersome skirts which interfere so greatly with facility and rapidity of movement. It has often been suggested that short skirts, combined with such adaptation and modification of the dress that it would no longer impede free movement, would meet this difficulty in some measure, and this cannot be doubted. Football, girls could hardly play, their temperament would unfit them for it; but cricket would surely not be impracticable, and though the champion ladies' eleven might not compare favourably with the youngest and worst cricket team in a public school, it is not so much a question of comparing lads with girls, as of training the latter by competition with others of their own sex. Ladies often play lawn-tennis excellently; and, though they seldom equal good gentlemen players, they fall so little short, in spite of the impediment of long trailing skirts, that, suitably attired, the disparity would be trifling. Boating, as it does not need such freedom of movement as cricket, is not so much beyond the powers of women, and many ladies acquire a facility and dexterity that do them infinite credit; indeed, nearly all the games and exercises in which men and boys take pleasure, and in which they find profit, can, in some fashion, be taken up by girls. Nor is there the smallest objection to them when reasonable caution is exercised; no healthy, active young woman would run any special risk. She can play tennis and cricket, and ride, run, and walk; she can row, shoot, and enjoy drill; she can tricycle thirty or forty miles at a stretch, and find the keenest enjoyment in all these innocent amusements. Nevertheless, I know of mothers who regard any outdoor

exercise as unladylike, and prohibit their daughters from tricycling and taking long walks, and even object to lawn-tennis; and who think that they are training up the said daughters to fill their allotted station in life with enjoyment and usefulness by guarding them from all manner of probable and improbable dangers. Nothing could be more preposterous; and, in the mistaken persistency with which they interdict graceful, healthy, and innocent amusements, they are actually injuring their daughters' constitutions, and making them all the more liable to subsequent illness and suffering. The mind should not be neglected, and ladylike accomplishments should not be left out of the reckoning; but if all play and no work makes Jack a mere toy, all work and no play makes Jack a dull boy. The human body is a machine of exquisite beauty and marvellous adaptability; it can do more than any other machine ever invented; but to accomplish the most perfect and brilliant results it needs thorough training, a reasonable amount of exposure in the fresh air, and well-considered exercise. Too many weak mothers, in their laudable desire to bring up their daughters well and in a ladylike fashion, neglect the body, and so prepare for it a heritage of suffering.

Something might be added as to the games of young children too small to take part in those scientific sports demanding strength and endurance. The choice is small, but nothing could be better than skipping, which is a good preparation for more difficult amusements in later life; so is battledore and shuttlecock, and keeping a ball up in the air; indeed, all these afford greater scope for skill and activity than might be supposed; all develop the muscles, and, last but not least, relieve the eyes, which have a great tendency to be overstrained by constant application to small type and near objects.

Perhaps no greater mistake is commonly made in these days than overworking young children, whose immature brains and bodies need time for development, and who, in the long run, are positive gainers by greater freedom in early life and less application.

Walking, as commonly practised, I have not touched upon, because, it can hardly be regarded as useful; unfortunately it is almost the only form of exercise that many girls, especially in towns of some size, are permitted to have; but though the usages of society would be outraged,

I must say one word as to the greater advantages of free, independent walks with congenial companions as compared with the formal marching, two or three abreast, along the streets, so much in favour in ladies' schools; fresh air and rest for the eyes are certainly secured, but little more, and an exercise which might be useful and health-giving is shorn of all its attractions, and does little good. In this matter boys have untold advantages; when they go for a walk they are allowed to run hither and thither, and to move their limbs freely, while their sisters walk stiffly along, imitating as closely as they can a body of troops marching to church. Uniformity of movement is secured, and the prejudices of society are respected, but, how much better to let girls play at almost anything in the playground, and for a time to throw off the restraints of school life.

Enough has surely been said to prove that exercise is an important part of the child's education, and invaluable in giving him grace and freedom of movement; it is not sufficient to train the mind carefully and systematically, the health of the body is little less important, and that is best promoted by well-considered and carefully superintended exercises in the open air. It is a truism to remind the reader that the child who plays the best is often the one who learns the most.